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DISTANCE EDUCATION AND THE TRANSFORMATION OF SCHOOLING

Living and Learning in the Information Age

By

Jason Ohler, 5/89

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Jason Ohler
Educational Technology Program Director
University of Alaska Southeast
11120 Glacier Higway
Juneau, Alaska 99801

Phone: 907-789-4538,4417

Anytime email: BITNET- JFJBO@ALASKA, MIX- JOHLER, Compuserve- 76077,3600

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ABSTRACT

A TV interview with the Secretary of Education (McNeil-Lehrer, May 4, 1989) revealed him to be another in a long line of sincere, intelligent, dedicated leaders, passionately committed to creating schools that honor a child's right to be educated to his or her fullest potential. Also like his predecessors, he believes that America is a nation dangerously at risk, with an often mediocre and sometimes deplorable education system that precludes students from realizing their fullest potentials. He too vows to set this frightening state of affairs aright largely by using what must often feel like the bureaucrat's only real weapon: increased awareness.

Increased awareness is always welcome. But as a primary strategy it is over worked and consistently ineffective. It has neither significantly raised the standards of American education nor improved student achievement in the past and it is doubtful it will do so in the future. What American education desperately needs are new tools, new approaches to learning, and new educational contexts more in touch with the world as students will experience it after leaving school.

Changes of this magnitude require a fresh perspective that allows us as a society to travel familiar territory with a renewed identity and idealism. Distance education provides such a perspective. In its most positive application, it is used to cross difficult physical and social boundaries, reaching minorities, high risk learners, and the handicapped, overcoming the tyranny of time and distance and equalizing opportunity for our nation's disenfranchised. In its worst, it uses its incredible power to reach large student bodies to reinforce old standards and misconceptions, and propagate new ones. In both cases it incorporates the techniques and technologies which seem unnatural in typical classroom settings and yet are part of the everyday environment students will encounter after graduation.

But distance education is more than just another attempt by the education community to respond to the rising chorus of criticism leveled at it by citizens, school boards, and government. It is a discernible step in social evolution. It is an imaginative and yet practical attempt by society to invest itself with the survival skills needed in a highly competitive world which increasingly values the educated, cooperative, technologically competent citizen.

This paper is concerned with these two aspects of distance education: how it can change our approach to learning and how it can change us. Through the eyes of its potential we can navigate the long journey of addressing some of the educational problems which have plagued us since Sputnik and which have increasingly turned the American public into a group cynical about its own value in the world. At the same time, we can see in it our evolution toward a culture whose values, organizational principles, and sense of what it means to be educated and prepared for the tasks of living are undergoing a transformation at the most fundamental levels.

I. DISTANCE EDUCATION - HOW IT CAN CHANGE LEARNING

Imagine: instead of sitting in a classroom to learn American history, your teenage daughter goes to a special viewing room at school or at a community center with a group of her peers, or perhaps even stays at home by herself, and settles behind the television. With a soft drink, notebook, telephone, and computer close by, she punches the remote control. On comes Mr. Johnson, standing at the blackboard in Studio B somewhere on the East coast of the United States explaining the origins of the Civil War. Confused by something she has just heard, your daughter places a telephone call. Seeing the red light flashing on his portocom, Mr. Johnson stops. "Yes?"

"Mr. Johnson, this is Becky in San Francisco. I don't get it when you say the Civil War had more to do with economics than slavery. Can you explain that more?"

"How many other people are having that problem?" asks Mr. Johnson. He checks a bank of monitors and discovers that seventy-eight of his one hundred thirty-five students have registered an affirmative answer through their computers. "Hmmm. I see there are a number of you. It looks like I need to go over that area more thoroughly. First let me send you a map of the United States which shows the kinds of economic activities that were going on around the time of the war. This will be very useful in my explanation." The promised map immediately begins to appear on Becky's printer, as well as those of her online classmates. "And let's switch gears in terms of tonight's assignment. Each of you should send your tutor a half page about this concept, and they will post the best from each learning group to the electronic bulletin board. Log on sometime Monday with your computer and read what the others have said. You have much to learn from each other."

Welcome to distance education.

Simply put, distance education occurs when students are one place and teachers, peer learners, or resources are in another. The gap in time and space

between them is bridged with an array of familiar technology as well as the new machines of the information age, like those used by Becky.

The system she uses is already in operation in a number of locations in the U.S. And it is just one of many kinds delivery systems available. Distance learning relationships can be maintained in a number of ways, from the simple exchanging of printed material via post (often referred to as *correspondence education*), to two-way interactive, cross-continental television. The combination of new technologies that are incessantly spilling over the horizon and into our lives and the re-interpretation of older technology and learning techniques promise to maintain a fresh supply of learning options. The result is always the same, regardless of how teacher and students maintain their relationship at a distance: information is transported, not people; students stay put and school comes to them.

WHO ARE THE DISTANCE LEARNERS? *The Many Faces of Becky*

On the surface, distance education may appear to serve only the geographically disadvantaged. Public education originally turned to distance delivery as the most cost effective means of extending the promise of an equal education to those who did not live within bussing distance of a school.* Business has turned to education by TV and correspondence instruction as relatively cheap ways to meet the needs of frequently re-educating a geographically dispersed labor force.

But beneath the surface can be heard the rumblings of major shifts in social organization that suggest distance education is suitable for a number of different types of students, all of whom share a similar trait: they all feel somehow 'distant,'or *excluded*, from the educational system. For some the distance is physical. For others it is cultural or psychological, however near

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* It is interesting to note that integration by bussing was essentially an industrial age version of distance education, moving people rather than information to achieve equity of educational opportunity.

by a school might be. Regardless of the reason, they turn to distance education in search of options.

Ten years ago the options were limited. Today they are numerous and growing rapidly. Those willing to seek learning opportunities and resources beyond those immediately or traditionally available will find that media can often effectively transport experts from around the country and the world into their homes, schools, and businesses.

Accepting that 'distance learners' do not necessarily live in remote areas, a redefinition of terms is needed. What we are talking about are dispersed, or *decentralized* learners who are re-combined or *networked* to form new learning communities that are less dependent upon common space and old formulae for the maintenance of public education. This is a two step process. *Decentralization* de-constructs and often individualizes, while *networking* reconstructs, often in cooperative situations. These terms are hardly new or under utilized. Techno-philosophers from McLuhan to Toffler have used them exhaustively to describe the fundamental shift from industrial to information ages in the way we work, play, learn, and live.

Decentralization and networking can appeal to learners for a number of reasons. To understand the broad appeal that distance education could have, consider it from Becky's point of view. Why has she turned to using a non-traditional method of learning? There are numerous possibilities, many of which are overlapping and reinforcing, and some of which are certainly destined to spark debate about how to balance teachers and technology, the local school and its electronic counterpart.

1) **Because she has no other way to receive a state-sanctioned education due to geographic isolation.** Perhaps Becky lives in a remote community in Alaska, North Dakota, or any rural education district, and simply can't get to school. To many, these constitute the *real* distance learners. It is important to note that the students in this category have an apparent lack

of choice about attending a centralized school. That is, although moving to a more populated area with regular schooling opportunities might be theoretically possible for some families, for many it would occur at such a great cost to the integrity of home, job, and family that such a move becomes impossible in practical terms.

The system Becky is using is commonly employed by rural schools as a means of trying to equalize educational opportunities with those of larger schools. Many small schools who can only afford for the 'three Rs' and other staples of the American educational diet, 'beam in' foreign language courses, upper level mathematics and composition courses, and others not affordable on a face-to-face basis. A number of services which resemble Becky's, like Texas TI-In, STEP (Satellite Telecommunications Educational Programming from Spokane, Washington), and NUTN (National University Teleconference Network from Oklahoma) are just a few examples of what were a short time ago just experiments in this kind of learning which have become sizable commercial enterprises almost overnight.

2) **To avoid or reinforce particular content**. This is often considered the domain of 'home learners,' students who are often avoiding a particular life outlook at the nearby learning institution. The most obvious example are those wishing an education with a curriculum driven by religion rather than secular humanism. Becky may be one of the thousands of students who use specially prepared correspondence learning materials with a Christian perspective. Patricia Lines estimates that fully half of all home learners fall into this category.[1]

Or Becky may subscribe to one of the many services that promise to come into existence in the near future which are neither mainstream nor religious. Perhaps a new service will offer a perspective of our nation's past from the point of view the contribution of women or the treatment of natives, either of which would offer a view substantially different from what most would consider

standard American history fare. Perhaps she is Mexican-American, and part of program is in Spanish and focuses on the contribution of her ancestors to American history. The possibilities in this regard are endless.

3) Because she is incarcerated. Of the thousands of people incarcerated in American prisons, all will need some kind of education. Perhaps Becky is in a model detention center of the future run by an administration which understands that educational access is the key to deterring recidivism. Electronic access to educational resources holds great promise for reaching potentially dangerous and socially (and often geographically) isolated audiences.

4) To avoid social influences. Becky, quite likely at her parents' behest, may turn to distance education in order to avoid negative influences such as drugs, gangs, and high drop out rates which can negatively impact school quality. Her family can perhaps neither move, for employment reasons, nor afford to send Becky to a private school. Given that these social maladies are on the rise, the incentive to seek an education at a distance is quite real.

5) To experience or avoid certain learning dynamics. One of the fastest growing areas of distance education in the K-12 arena is what is often referred to as 'online computer conferencing,' allowing students to plug their computers into the phone system and communicate with anyone in the world who can do likewise. Online computer conferencing projects such as Long Distance Learning Network and Interactive Communication Simulations[3] use electronic networking to practice cooperative learning, resource sharing, and other untraditional methods of interaction which seem out of place in the typical school but in step with the new methods of living and working we are warned are the hallmarks of the highly successful Japanese style of management.

Of those wishing to avoid particular learning dynamics, perhaps the most interesting are those who do not like the distance in *local* education, both

physical distance in the case of large, lecture-based classes, as well as psychic and social distance in the case of teachers and students who are unable to develop a rapport.[2] It is interesting to note that in some cases the so-called high risk youth respond to computer-aided instruction simply because they can avoid the teacher-student hierarchy dynamic.

6) **Because she is severely disabled**. Becky may be so disabled that she is essentially isolated from nearby schools. Her online service may network her with people of similar disabilities for group support, to be addressed as a member of a more or less homogeneous group for the purpose of instruction, or to offer services of value to the disabled. (Disability Information Services of Canada[4] and ChatBack of the UK[5] are computer conferencing systems that offer models in this area.) Or her network may be used to do just the opposite, to mainstream her with a 'normal' peer group and to offer equal access to learning resources used by a hetergeneous group of students. Because members of her online peer group do not interact with her directly they are less likely to address her as a 'disabled' person and to be predisposed about her abilities.

Becky may also be home ill, just for a day, or perhaps for a few weeks with a bad case of pneumonia. Her online service is there to be used as her energy permits.

7) **To avoid having to abandon a life style or culture**. Perhaps Becky lives an alternative life style, on a farm, on the road, or even on a boat. The Calvert school, one of the most successful correspondence schools for elementary students in the U.S., counts among its many patrons the children of parents in the circus, the entertainment industry, and sports, who move frequently and need a consistent form of education for their children. The parents of Tammy and Michelle Walsh sold their house, bought a boat, and enrolled their daughters in the American School, a correspondence school using primarily mailed print material. They organized pick up and drop off points for homework so that they could sail the Carribean as a family. Both daughters

went on to college.[6] Although they could not use a live, interactive service like Becky's from a boat, the day is not far off when this could happen.

The refusal to abandon culture is perhaps one of most poignant rationales for the use of distance education by the native population. Perhaps Becky is a Native American and chooses to live in her community in order to retain her cultural context as the framework of her learning, while importing western education on her own terms. This approach is very imperfect in its design concept, ensuring the displacement of some indigenous life style and practice. However it seems to be the best approach so far in terms of allowing people to straddle two cultures. The proposed NOLN Network in British Columbia offers an instructive example in this regard. It proposes to tie together seven native communities or institutions with native concerns with an electronic educational delivery system, allowing them to teach one another and avoid non-native, non-multicultural mainstream education which they feel has done a poor job of meeting their educational needs.

8) **To resolve a schedule conflict**. Perhaps using this method of instruction allows Becky to stay on the swim team and meet a graduation requirement, take an elective from which she could greatly benefit, or add to her transcript a course she needs in order to enter a line of course work at college. She also has the option of not 'attending' her distance education session, but taping it so she can replay it later. While she misses the opportunity to interact with her online teacher, she at least does not miss the lesson entirely as she might in a regular class. Whether she 'attends' the online lesson or not, the tape is a handy resource to have, allowing her to replay portions she didn't understand the first time through.

Scheduling resolution is one of the primary reasons adults turn to distance education, allowing them to juggle a job, often a family, and a desire to go to school. In this case, there is often little or no "real time" interaction, as there is in Becky's American history class. These learners

accept education on their terms, listening to or watching tapes and reading materials as their schedule permits.

9) Because she is not learning in school. Perhaps Becky's school has an American history teacher that does not challenge her, who is teaching outside his or her field, or with whom she has a difficult time establishing a rapport. The service that she subscribes to may well be noted for its careful selection of teachers with proven in-class and online teaching records and offers a high quality, cost-effective alternative. As people like Becky begin to use a combination of distance and local education options, the two will inevitably go through a period of reconciliation in which they try to establish a relationship which is somehow competitive and cooperative at the same time. This promises to be a painful adjustment.

10) To escape tracking. Perhaps Becky is one of the thousands of students in American schools who are "tracked," a practice which school districts use to label students at an early age according to their supposed learning levels. Despite motivational, family, or other problems at the time she was tracked, it is likely Becky has not been re-assessed over the years and has continued to be 'taught down to' throughout her learning career. She turns to her online service which, we hope, avoids such arbitrary preconceptions of her ability.

It is interesting to note that face-to-face education's greatest attribute, a teacher's ability to be able to 'read' students on a daily, 'real time' basis becomes its greatest impediment when applied prejudicially. Online teacher's who might usually harbor misconceptions in a classroom situation (whether consciously or not) about, for example, what they feel to be womens' 'natural' inabilities in computer programming or math, find themselves in a an environment which can be less conducive to the practice of those misconceptions.

11) In order to learn in a more global context. A number of online computer conferencing projects take advantage of the fact that they are tied together by a global phone network. One such project on the Source (a computer networking service based in the U.S.) involved social studies classes from five countries discussing what was unique and what was universal among their cultures.[8] A local project on BITNET used communication among kids from other countries to supplement foreign language instruction.[9] Kids Network run by National Geographic offers children a chance to track international environmental problems across political boundaries.[10] The McGraw-Hill Information Exchange (MIX) runs a number of projects with a global or at least international flavor, such as tracking bird migrations over North America, and stimulating communication (electronically and face-to-face) between students in the Soviet Union and the U.S.[11] The list of such projects is long and growing.

Perhaps Becky has chosen this American History course because it is taught by an international team of experts and allows her to correspond with an international body of students, thus offering her a more global, less provincial point of view than she might otherwise receive. Perhaps her parents are wise enough to encourage her to take such a course because they understand that the world she inherits is in many ways the global village that was predicted decades ago by McLuhan, in which xenophobia is dysfunctional and cross-cultural communication is a way of life. High risk-learners, often with overwhelming personal problems, can particularly benefit from a perspective which helps lift them out of their own emotional morass and place their lives in a much larger perspective.

There is an additional kind of 'globalness' that can occur in distance education programs in which people learn privately (usually at home). Private instruction allows those who do not ordinarily come together for instruction (like office personnel and management, or adults and school aged children) to 'gather,' however anonymously, in a common learning environment. There is no

automatic benefit in this, but it does offer obvious potential for cost effectiveness as well as intra-cultural and cross-cultural experiences not available in our often stratified educational settings.

12) Because she wants to learn information economy skills. What Terry is doing is not just for fun. This is the very stuff of the evolving work place. If nothing else, learning via technology establishes a comfort level with a work environment that students will find upon leaving school.

Not only should Becky expect to work in such an enviroment, but she should expect to continue to learn in one as well. Service industries (such as the health and engineering professions), the military (accounting for hundreds of thousands of correspondence students), and corporations need to frequently re-train a geographically dispersed work force due to rapid advances in information, techniques, and technologies in their fields. Focused delivery systems like Becky's are already commonly used for such purposes. A telecommunications curriculum for middle and high school students (some would suggest for lower grades as well), which has computer communications at its focus, might include online searching of data bases, creating and maintaining a discussion group online, and working cooperatively with students from across the country or the world on a joint project.

13) **For remediation.** This means different things in different cultures. In the United States, where high school dropout rates are high, and where there appears to be a strong causal connection between being a drop out and a convicted criminal,[12] new remediation models have sprung up, from supervised correspondence study leading to a GED (General Education Diploma), to on-the-job-education. In a number of foreign countries, such as Japan and the UK, adults must pass entrance exams to enter college. The only second chance for those who do not pass is through some form of distance education. The U.K. runs an extensive Open University program for adults, while Japan has just inaugurated the University of the Air (UOA) which broadcasts for eighteen

hours a day using radio and television.[13] Both programs provide instructive models for remediation.

14) Because schools are too expensive for the state to provide. This is particularly true for developing countries. A typical example is Kenya whose government realized that with education consuming a third of its annual budget, it had to find cost effective alternatives. Thus it established the CCU (Correspondence Course Unit) which employs radio, print, and short face-to-face courses as an alternative to building the kind of elaborate school infrastructures common in developed countries.[14]

In the US, private education has always been the alternative to public education for disgruntled parents, but is often too expensive for the vast majority of American families. Perhaps Becky's parents really wanted to send her to a preparatory school but could not afford to. Their alternative was subscribing to an online educational service.

15) To improve "local" communication under certain conditions. One of distance education's greatest contributions to 'local' education is the idea of using communication technologies (FAX, electronic mail, phone) to connect teacher and student who ordinarily meet on campus but are also separated from one another due to, for examples, scheduling (i.e., meeting only once a week) or work-related absences (i.e., on the road, conducting research, ensconced in a library heeding the publish or perish imperative).

For the past five years I haved used electronic mail to maintain a communication link with my students in between classes and while travelling. As a result of the near-ubiquity email affords me, I deliver a far better service to students who ordinarily are forced play telephone tag or find me out of town unexpectedly during office hours. As Becky's 'local' teacher, I might ask her class to attend two lecture/discussions a week (or perhaps watch one lecture on an electronic service) and send me thoughts, assignments, or questions regarding concepts or homework via electronic mail in between classes. I would

probably also develop online study groups, so that Becky is part of a team of learners who share resources and present group projects to me. Whether I am on the road or at home I can logon to my electronic mail service and process student correspondence. I have found that much of the 'business' of being a teacher at the post-secondary level can be handled by electronic communication. For the portion that constitutes the true human interaction of a teacher -student relationship which cannot be handled electronically, electronic mail is used to set up times for face-to-face meetings.

16) **To reduce anxiety and improve face-to-face communication.** In a recent pilot project in Alaska, geographically remote teachers using electronic mail to support distance delivered education reported observing a very interesting phenomenon: as a result of communicating with others via electronic mail, their students improved face-to-face communication skills. This was particularly observable in those students considered typically non-communicative or shy.

It was a totally unexpected byproduct which in hindsight seems quite understandable. The fact that email does not require users to expose themselves or to engage in 'real time' interaction makes it a non-confrontational mode of communication. The reduction of experience to delayed tranmissions of text allows for reflective response and in a sense helps to equalize participation for a self-conscious or easily intimidated Becky who does not do well on her feet in competitive or face-to-face situations.

17) **Because the media are motivational**. Given the omnipresence of network television it is not surprising that children are spending more time being educated by TV than school. Commercial television may not constitute school to the literal minded but it is a formidable teaching institution nonetheless. Above all, television, as well as computers and other information technologies, are expressions of the culture of today's youth. As such, students often find them motivational or at least comfortable to use.

Another aspect of this is the fact that technology-assisted learning can provide learning opportunities that lecture-based education can not (and vice versa). Teaching tools such as computer and TV simulations can be used to approximate experiments or experiences that are too dangerous, expensive or otherwise impractical in real life, such as flight simulation, working with radioactive materials, or a trip to a foreign country. These are not necessarily the domain of distance education, as they have been incorporated into classroom activities for many years. But as the emphasis continues to be meeting the needs of the learner on a more individual, flexible, specialized basis, and as home and school technologies like VCRs and microcomputers become more prevalent, they begin to be considered as very powerful supplements to any distance education program.

By and large, students simply enjoy 'online community.' Perhaps in some cases Becky simply prefers electronically delivered education because it is more exciting and familiar. Perhaps she is representative of the new generation of students, who, as a colleague put it, "are simply wired this way."

18) To take advantage of a world of experts and resources that only media can provide. Although reasons one through seventeen are subsets of this one, this point needs to be brought out explicitly. When school is no longer limited to the resources that can be physically located within a classroom, a world of learning opportunity opens up. Such opportunities range from the simple and inexpensive, like audio conferencing with the author of a book used in a course, to the more extravagant, like using two-way interactive television to meet with experts from foreign countries. Distance education will be remembered as the beginning of the school without walls in a very real sense. Although distance education has only achieved a wide audience in the past few decades (which is still small compared to the number of face-to-face learners), in the future we may well regard its slow evolution with the same historical respect as the installation of the first steam engines in factories.

Like the steam engine, distance education on a mass basis has the potential to reorder society. And although the distance student body is presently small in comparison with the number of centralized learners, it is growing rapidly.

Local vs Distance Education- Cooperation vs Competition

Each of these alternatives tugs somehow at conventional education, like forces in equal and opposite reaction. This is not a permanent state of affairs. Eventually a coherent and complimentary partnership between local and distance education will evolve. But in the meantime distance education on a mass scale will threaten the status quo and proportionally inhibit its use.

But this vantage point can be instructive. Assuming there is more than just the fear and pain of battling inertia, why should we feel threatened by distance education? What might Becky be giving up as a distance delivered student? What problems will arise from its use for teachers and school systems? These issues must be considered from three vantage points: 1) learning away from school, 2) attending school where some portion of the education occurs in a distant delivered fashion, and 3) other learning models which often combine the two.

1) **Away from school**. Learning away from school, presumably at home on a more or less individual basis, has obvious drawbacks as a full-time method. Socialization, group activities (like sports and choir), the give and take of immediate interaction among one's peers, the experience of a good, stimulating teacher in action are invaluable in aiding the learning process and developing character. Becky would also miss the opportunity to make her mark on the youth culture which is constantly recreating itself in the hallways of public schools. At the very least, a school's economy of scale allows it to afford things that individuals cannot, like computer networks, chemistry labs, and gymnasiums.

Society too would pay a price. As a side effect of pursuing the global perspective, a totally decentralized student body would cause the community to

lose the school as its traditional, unifying focus. The attention communities lavish on their schools, from electing their citizens to oversee public school policy, to the endless debate over programs and funding, is perhaps the most significant statement a community can make about its identity, culture, and personality. If that focus were removed, around what institution or principle would the community organize? The inherent need for the creation of community among physically proximate people is very great. Thus, a new focus would have to be found or the community would lose its structural and psychic integrity. It seems reasonable to assume that the new focus would be something more global and less immediate than the neighborhood school.

But in the short term, at-home learning will continue to be the exception rather than the rule for two primary reasons. First, there is a tremendous logistical difficulty in administering kids learning at home. In light of the fact that K-12 students are to some extent forced to be educated, their academic day needs to be enforced. The local school continues to be a very handy institution in this regard for busy parents.

And secondly, learning at a distance requires an internally motivated student studying in a supportive atmosphere. How many students at the high school level are internally motivated to learn, as the opportunity is currently presented to them through today's schools? No doubt some are. But as the law says they have to attend school whether they want to or not, potentially none of them are. Without a structured atmosphere to make up for this, student learning can be severely inhibited.

Incidentally, this is one of the most significant differences between students at the K-12 and post-secondary levels of both types, local and decentralized. At the college level, education is a matter of choice. Students pay to go and must run on their own motivation. But regardless of grade level or what methods students use to learn, without motivation there is certain failure. Distance education will only make that more obvious.

2) Learning at a distance at school. Distant programming administered by the local school system as a subset of the local curriculum is the most likely growth area for distance education in the immediate future precisely because it is done cooperatively with existing institutions. Schools currently using systems like Becky's are 'beaming in' teachers only when local resources cannot cost-effectively meet academic demand, or as special, supplementary events. Other delivery methods, such as computer conferencing, currently need the classroom as a base and the teacher's direction in order to ensure its proper application to existing curriculum. In these scenarios, local teachers do not feel immediately threatened with replacement by electronic competition. Some even welcome the reduction of pressure that comes with not having to teach in a content area unfamiliar to them. But should electronic teachers be used to deliver the same course work that is offered locally in order, for example, to relieve over-crowded classrooms, or offer off-campus options to escape social conditions in school, the present atmosphere of cordiality would dissipate.

Eventually friction will develop over the issue of who minds the classroom. Will certified teachers as we have known them for the past few decades be needed in distance delivered classrooms, or will we turn increasingly to a new creation of the information age, *the guide or academic coach,* who is not necessarily a content area specialist but can handle the mechanics of organizing and running the classroom? Perhaps teacher's aides of today are in fact the guides of tomorrow.

An example from the medical industry points out why teachers have a right to be concerned about this issue. The current nursing shortage is being met with a call from some quarters of the medical establishment for the creation of a new position which would be something less than a nurse, but perform many of a nurse's more routine duties for less money. This new position would undoubtedly disrupt the current efforts by nurses for increased salaries they

feel are long overdue. The analogy to education is quite clear. Will guides make some course offerings possible, relieve teachers of unwanted loads, and save communities money? And if so, at what expense to the professionalism and proper financial recognition of the teaching profession?

3) Other learning models. In between learning at home alone and at school with peers there is broad spectrum of options, such as the Danish Open Learning model[15] which requires that classes meet a few times during the semester face-to-face, and the rest of the time electronically using computer conferencing. Or the Chukchi community college model in Northwest Alaska that conducts much of its distance education classes by electronic chalkboard and audio conference, but employs travelling instructors to visit students in remote locations to conduct one-on-one intensive tutoring. Or the international computer network model which supplements regular classroom instruction. The list of such 'in-between' models is already long and growing, limited only by the creativity of those it needs to serve.

Thus we would expect Becky to lose the least and gain the most from a model which is a blend of the two, molded to a particular application and representative of a particular culture. And as a cooperative effort, we would hope that it is a creation which satisfies the needs of teachers and the school system as well. However, one thing is certain. Business, recreation, life itself as we experience it in America have to some extent gone electronic and decentralized. Education has to reflect that. The educational enterprises that combine local and distance education in ways that play to their advantages have the best chance of creating an educational experience that will speak to today's youth.

Many argued that in going to the moon we simply avoided problems at home. The same could be said about turning to distance education. It can be fairly asked, couldn't we simply rectify a number of the problems on a local level

that will drive people to seek electronic alternatives? Couldn't we begin to incorporate more cooperative learning models, rethink the efficacy of tracking, make a greater effort to reach our disenfranchised, etc.?

Perhaps. But until these problems are solved we are burdened by our own awareness that options exist or can be created from the raw materials of electronic education. If Becky's parents had access to an electronic alternative to the local school that would result in a significant improvement to her daughter's education they would be forced to use it, the same way they would not hesitate to give her medicine that she needed.

Many of the problems that Becky might have turned to distance delivery methods to solve have persisted unaddressed for decades. Whether or not distance education offers us real solutions to these problems, it at least provides a sorely needed fresh perspective. It forces our thinking beyond the confines of the campus and out into the changing world we are supposed to be teaching about. How our culture will evolve because of distance education is the subject of the next section.

II. DISTANCE EDUCATION - HOW IT CHANGES CULTURE

Today, major scientific discoveries, magical new technologies, and the reporting of world-shaking events from around the globe occur so frequently that we live under the illusion that the future is something that is never very far away. I am convinced that when most use the term 'the future' they are thinking in terms of ten to twenty years, and never beyond their own lifetimes.

But in fact the momentous changes to social evolution, like those caused by the wheel, the printing press, and the steam engine, can only be truly appreciated over the broad sweep of centuries. This is also true for the changes that will be caused by electronic communication, or more specifically for our purposes, what we have come to call 'distance education.' We can expect that as electronic education progresses and becomes more acceptable and commonplace, we will evolve as people with new expectations, new ideas of what

constitutes 'normal behavior and experience,' and what we consider to be the inherent rights of the student. The shift from a centralized, self-contained to a decentralized, networked student body will have profound long term ramifications, affecting many of the following principle variables of the traditional education formula that binds a community to its school system.

STUDENT POPULATION BASE: Prior to the industrial revolution, we were largely a decentralized (but un-networked) culture, living in communities in relative isolation of one another. With the coming of the industrial revolution, this trend was reversed. People began to centralize in larger numbers around factories and commercial centers creating what McLuhan called a center/margin social structure, with most people densely crowded into a center (city) and the rest living on the margin (the country).

With the normalization of distance education, this will to some degree reverse itself again, though decentralized culture will this time be networked. For the distance learner, school, in its most expansive sense, becomes a circle of influence whose center is everywhere and whose circumference is nowhere. The 'School Without Walls' (known in electronic circles as 'the virtual school') will become a reality in larger than life terms. Each student stands at the center of his or her learning network, no matter where they are physically located.

The potential student body will be immense. In one case a university professor who advertised a course in relativity physics on BITNET university network[16] was technically capable of reaching students at universities in North America, Europe, England, Australia, and portions of Asia, Central and South America. One of the latest and most comprehensive distance education institutions, The Commonwealth of Learning, seeks to make all distance education resources among the nations of the Commonwealth accessible to all of its members. The potential course offering from such an institution will be staggering. While both of these systems are used today primarily by post-

secondary students, the model will serve lower grade levels as well.

FINANCING & PROGRAMMING: Tax base will no longer be the determining factor regarding what 'a school' can afford to offer. Such large student audiences will reduce the service per individual cost dramatically and provide the incentive the business community needs to actively develop distance education as an industry. For better or worse, mass electronic audiences will turn education into an even bigger business than the mass readership, created by the text book industry.

Such large audiences will encourage the development of different flavors of mediated instruction with specific foci. We should expect more educational television channels, videotext and video services with specific philosophies, from Christian fundamentalist programming with evolution-free science courses to science course work developed by anti-development environmentalists. In a word, we should expect 'personalized' or focused education.

But there is a considerable down side. Distance learning is already largely a marriage of convenience between business and education. As such, business promotes its vision of what constitutes an educated human being, a vision with obvious deficiencies. While encouraging abilities in critical thinking skills and problem solving, it does not promote thinking about, for examples, the greater good of humanity, how to live a purposeful existence, or the relationship between art and personal expression. Such concerns are not seen to impact business. Thus education could lose one of its greatest achievements- the creation of a forum for the contemplation of life in its most fundamental and meaningful aspects.

ORGANIZATIONAL STRUCTURE: As the industrial age heated up, factory owners realized that they needed a work force capable of inordinate amounts of 'sameness,' that is, people who would show up at work at the same time every day to perform the same tasks in the same way, over and over. Public education was created to meet this need, training children in the spirit of this

'sameness.' In contrast, information age students will find themselves learning in different environments at different times at different paces, all of which will conspire to promote individuality and undermine the power structure upon which the industrial age was founded.

THE MEDIA: Behind the drive to mass produce education, is a fascination with media that is evolving faster than our ability to harness it or understand its moral implications. Technology always amplifies successes like wheel chairs as well as failures like oil spills. Because of this, its potential for abuse is very great. Without substantial citizen participation, large educational networks will simply be able to perpetuate old attitudes on a much larger scale. Whether we survive as a planet will be determined by whether we dominate our technology of the other way around.

In the past, regular education as well as correspondence study have relied heavily on print. But due to the overwhelming presence of TV's, cassette players, VCRs and computers in homes and schools, lessons are beginning to arrive in a number ways, setting trends for the future. Video and audio cassettes delivered by mail are cheap and effective. More elaborate and expensive systems enriched by visuals and/or interactivity, like the one used by Becky, are in their infancy and growing, spawning programming that arrives via phone system, cable TV, and satellite broadcast. Off hours communications between teacher and student will be maintained by electronic mail, FAX machines and phone. Laser disks, containing the equivalent of many encyclopedias of information, will become cheaper and more commonplace in homes and schools and will come with interactive interfaces which step students through lessons, branching for remediation when mistakes are made and advancing to the next level of difficulty when the material is mastered.

Specifically ahead in the near term for distance education are very powerful video stations, in both desktop and portable versions. They can be thought of as assemblages of FAX, computer, phone, and full motion, high

definition video technologies which will plug into the new, fiber optic phone lines that are being laid, and/or send and receive from the small transceiver or pizza-sized satellite dishes in the offing. To inspire wonder about what the next twenty years will bring in this regard we have only to remind ourselves what has been created in the last twenty.

CULTURAL DIVERSITY: This issue will generate considerable friction due to the changing of social relations caused by distance education. Implicit in wide area education delivery is the ability of the society which develops and delivers education to culturally displace those who receive it. In very practical terms there is a good chance that Becky's history teacher knows nothing about Alaskan history. So how useful is his program for Alaska?

Wide area delivery, whether the nightly news out of Washington, D.C. or a magazine published in New York, homogenizes viewpoint. For that matter, so do textbooks that are distributed nationally. But they are used by teachers in classrooms who can bring the local ethos to bear on their use. This is not inherently true of distance education and thus must be built into the overall delivery scheme. The strategic use of teachers, guides, and local resources will be crucial in this regard.

Wide area delivery is also potentially useful for the maintenance of cultural diversity. Indigenous groups are looking to distance education as a way to access mainstream education at arm's length, allowing students to retain their culture as the context of their learning and growth. No doubt some societies using distance delivered education will be drawn further into the sphere of dominant cultures. But solutions to this problem will also be invented, including the development of delivery systems within particular cultures, regional rather than national networks, and 'raw' course work which allows on-site teachers and coordinators to fill in 'blank areas' with examples and metaphors of local significance.

SCHOOLING MODELS: It may be hard for some to think about the

possibilities of something that seems as 'unnatural' as distance education. And yet it only seems unnatural because the self-contained, book-and-lecture based school system has been such a mainstay of culture and community in our life time. In fact, centralized, publicly supported and mandated compulsory schooling is a rather new phenomenon. In the United States it was not until around 1918 that compulsory laws made education a national reality.[17] Schooling is thus what Wedemeyer calls a relatively new artifact of education.[18] As early as last century schools would have seemed just as unnatural to some Americans as computers in classrooms would seem to some today.

It was about a century ago that distance education opened in earnest on a number of fronts lead by pioneers in educational and social philosophy who achieved a kind of folk hero status in their day. It began in the U.S., as it began everywhere else, as correspondence education, using written materials sent by post between student and teacher. And it began, as it did most other places, as a direct appeal to different population groups who found themselves educationally disenfranchised: women, the geographically disadvantaged, the working person unable to attend school on a regular basis due to job scheduling and often family duties. And it started as a convergence of technical achievements and social evolution. Cheap paper, improved roads, a reliable postal system, and the drive for an educated work force and electorate pushed distance education out into the open as a recognizable movement. One of these efforts, the International Correspondence Course survives today nearly a century after its creation, having served over nine million students.[19]

The tradition continues. Today's drive for distance education is also a cry for equality of opportunity, for access to the system, and the result of the convergence of technology and human need. The main difference is that the needs of the society that it is being called upon to serve are much broader and

more diversified, and the technology that is used to deliver it is far more powerful. Anne Batey and Richard Cowell noted in "Distance Education: An Overview", "Distance education may force us to redefine what a school is."[20] In fact, the combination of a broad student base and powerful technology allows us to reinvent what school can become.

Although it will be easier for higher education to take advantage of the individualized, disciplined nature of decentralized education, the fact that electronic learning can be convenient, fun and effective, combined with new attitudes in parenting and the ability to work at home in a number of electronic cottage industries, may give birth to many different models of schooling even in the lower grades. Like-minded neighbors may form study groups for themselves and their children, using many of the educational services available to them as their basis. Teachers, guides, or perhaps parents will facilitate such groups, monitoring and promoting student cognitive progress and personal and moral development, while relying on technologies like interactive laser disks to a live broadcast of a teacher in another classroom as the primary source of information for the courses they oversee. On-the-road technology (laptop computers, ever-smaller satellite transceivers) will disperse the student body even more, encouraging practicum-based education, with students traveling to hands-on kinds of resources and reporting back to a distant teacher.

In the year 2000 we may well be choosing how much of our school taxes we will want to pay for direct instruction and how much we wish to retain to spend on the distance delivery of educational materials and services to home, schools, or community centers. Schools may become institutions whose most cherished aim is to deliver all of those services now considered of secondary importance: sports, art, choir, socialization opportunities and individual attention, the only kinds of activities which renowned educator William Glasser sees as currently succeeding at all in public education.[21]

OVERCOMING THE BARRIERS

There are significant barriers to the recognition and employment of distance education. Fortunately everyone in the educational community has a part to play in overcoming them.

Educational researchers and professional educational organizations must formally recognize that the psychology and the needs of the decentralized learner of tomorrow are different from those of today's students. Fortunately we are in the remarkable position of having a clear image of the future in our midst: today's geographically disadvantaged student can serve as a model of future information age learners, the new breed of students who will receive some portion of their schooling via cable, broadcast, satellite, phone, or postal systems. By observing the distance learner of today we are looking through a portal into the future and seeing what at least some of our children will become. A very exciting and productive line of educational research awaits researchers willing and capable of pursuing an understanding of this new student.

The federal government can do much to lay the groundwork for distance education to evolve. Although the programs like Star Schools which award large grants to relatively few organizations certainly help, I strongly recommend that much smaller amounts of seed money be given to many more schools in order to prime 'the awareness pump.' Distance education does not have to cost hundreds of thousands of dollars. A microcomputer hooked into the phone system and a $500 budget can bring experts and peers from the around the world into a classroom in ways that significantly enliven and enhance instruction.

But the federal government's most vital role in the development of distance education is to champion the creation of a special educational telecommunications rate. Many failed and would-be distance delivery systems are victims of online charges, the simple inability to pay the phone company. This may seem out of place with Reaganonomics but we must remember that at one point

the idea that each child should have a textbook seemed ridiculous. Now it is recognized as a right. In the same way, we must appreciate that the day has arrived when each student has a right to online resources. A combination of a reallocation of public funds, more capable information processing machines, and an educational online rate will make that possible. We can argue that the FCC has brought this upon itself. The de-regulation of the telecommunications industry has given birth to some of the most venal children's programming and made public access for educational purposes on cable networks less sure. Educators need an educational online rate to fight back.

Individual state governments can take a number of steps to encourage distance education, such as making some form of educational telecommunications awareness a prerequisite for teacher certification, sponsoring needs assessments to discern where distance education can be used effectively and non-competitively, and dedicating positions in government to help organize distance education efforts, particularly those to coordinate in-state resources into information co-ops whose resources are available state-wide. To be effective, state governments should look beyond just the education community when designing such co-ops. They should organize a joint effort among federal, state, and local governments, as well as private entrepreneurs, to build the cooperative networks that will become readily affordable only if they can serve a broad base of people. For the most part, this is the only way the education community will be able to afford network access.

Even more significant are actions taken by state governments as a group. Nearly every state uses some form of distance education. Pooling of resources and resolving issues such as inter-state teacher certification will encourage the use of distance education in all states. Using distance technology, like bulletin boards and teleconferencing among state distance education coordinators can encourage the fresh exchange of ideas and news in the field that is so vital for planning, especially on a state-wide level.

But much of distance education's success will depend on what happens at the local level. Educational telecommunications is gaining momentum the way educational computing did, percolating 'from the bottom up' among a small number of forward looking teachers who understand its utility and significance. The astute school adminstrator will look for such teachers and turn to them for guidance. From a top down perspective, school districts can employ standard methods of encouragement to make educational telecommunications a reality, such as funding the purchase of equipment and services that are vital in the development of new programs. In addition, they need to give teachers training and practice time to become comfortable with the new technology and teaching methods, and then reward them for their successes.

In some respects, success will have less to do with technology and much to do with classroom management, learning styles, and new teaching models. The teacher who is at home in a cooperative learning environment will feel the least threatened by networked education. This cooperation happens on basically two levels:

* **Among students**. The information available in most subject areas will be so abundant that it will become necessary to teach students how to use a blend of technological and human networks to pursue their studies and to prepare them to solve the complex problems faced in the information age economy.

* **Between students and teacher**. As it currently stands, almost all evaluation in the K-12 environment (and much in higher education) consists of teachers evaluating students, and not the other way around. This is a wonderfully illuminating remnant of the industrial age; rarely did the lathe operator critique management. For the 'beamed in' teacher, successful decentralized education will come to depend heavily on two-way evaluation to compensate for the information loss caused by the teacher and student not meeting face to face.

At the same time, local classroom teachers must be encouraged, by parents, administrators, professional educational organizations, and each other, to feel comfortable in new roles, as coach, guide, and network member, rather than as boss and fount of all knowledge at the head of the class. Their ability to do so will ensure their place in the classroom of the future. In the

same way that track coaches do not expect to outpace their fastest runners, information age teachers will not expect to be more factually competent than their students. In fact, they will expect to learn from them. A teacher's level of knowledge will always be important, but more and more s/he will be called upon for the kind of wisdom and insight that machines will never have and for which the National Teachers Examination can never test.

Ultimately, the cooperation needed for successful distance education must come from the community. And it is best that community members offer their cooperation hesitantly, even skeptically, wary of distance education's reliance on so much technology, and demanding proof of performance. They should always wonder how much face-to-face instruction could have been purchased for an equal sum of money. They should always wonder if the process of distance learning makes people more or less human. This attitude will keep society vigilant and hopefully involved. Without citizen participation in the education networks of the future, we could simply end up continuing old problems on a much larger scale.

But first community members must face squarely the unpleasant and often frightening fact that there exist grave problems with our schools that have not been corrected despite much rhetoric and attempted action over the years and that the situation only seems to be getting worse. Only then will they allow themselves to begin thinking in unfamiliar terms, like distance education. Only in this context do the creation of educational networks make sense. Although distance education can not cure all of America's education problems, it is certainly part of the cure. Integrated with other learning models in overall education plan, it offers great hope and deserves much trial and examination. It is above all a mindset, a belief that the 'tyranny of time and space' can and should be overcome for the sake of better education.

FOOTNOTES

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